

What is claim d is:

1. A temperature detector circuit for generating an output when a target temperature is reached, the temperature detector circuit comprising:

a first current source for generating a PTAT current which is a first reference current at a reference temperature; and

a second current source connected in series to the first current source through a node and supplied with a temperature-independent reference voltage for generating a second current proportional to the reference voltage, which is a second reference current at the reference temperature;

wherein the first and second current sources are configured such that a ratio of the second reference current to the first reference current is proportional to a ratio of the target temperature to the reference temperature.

2. The temperature detector circuit of claim 1, wherein the first current source includes a current generator for generating a second PTAT current to derive the first PTAT current.

3. The temperature detector circuit of claim 2, wherein

the first current source further includes a current mirror for mirroring the second PTAT current to produce the first PTAT current.

5 4. The temperature detector circuit of claim 1, wherein the second current source includes a transconductive amplifier for transforming the reference voltage to a third current to derive the second current.

10 5. The temperature detector circuit of claim 4, wherein the second current source further includes a current mirror for mirroring the third current to produce the second current.

15 6. The temperature detector circuit of claim 1, wherein the first current source includes a first resistor for determining the PTAT current, the second current source includes a second resistor for determining the second current, and the first and second resistors have a ratio at the reference temperature proportional to the ratio of the target temperature to the reference temperature.

20 7. The temperature detector circuit of claim 6, wherein the first and second resistors have a substantially same thermal coefficient.

25 8. The temperature detector circuit of claim 6, wherein

the first and second resistors are made of a substantially same material.

9. The temperature detector circuit of claim 1, wherein
5 the reference temperature is room temperature.

10. The temperature detector circuit of claim 1, further
comprising an output stage connected to the node for producing the
output.

11. The temperature detector circuit of claim 10, wherein
the output stage includes:

a MOS transistor having a gate connected to the node, a
drain connected to a current path, and a source
15 connected to a low voltage;

a capacitor connected between the node and source; and
a buffer connected to the drain for providing the output.

12. A method for generating an output when a target
20 temperature is reached, the method comprising the steps of:

connecting a first and second current sources in series
through a node;

generating a PTAT current by the first current source;

supplying a temperature-independent reference voltage to
25 the second current source for generating a second

current proportional to the reference voltage;
selecting a reference temperature for the first and second
current to be a first and second reference currents,
respectively, at the reference temperature and with a
5 ratio of the second reference current to the first
reference current proportional to a ratio of the target
temperature to the reference temperature; and
generating the output when the target temperature is
reached.

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13. The method of claim 12, further comprising the steps
of:

generating a second PTAT current by a current generator;
and
15 deriving the first PTAT current from the second PTAT
current.

14. The method of claim 13, further comprising mirroring
the second PTAT current for generating the first PTAT current.

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15. The method of claim 12, further comprising the steps
of:

transforming the reference voltage to a third current by a
transconductive amplifier; and
25 deriving the second current from the third current.

16. The method of claim 15, further comprising mirroring the third current for generating the second current.

5 17. The method of claim 12, further comprising the steps of:

 selecting a first resistor for determining the PTAT current;
 and

 selecting a second resistor for determining the second
10 current;

 wherein the first and second resistors have a ratio at the
 reference temperature proportional to the ratio of the
 target temperature to the reference temperature.

15 18. The method of claim 17, wherein the first and second
resistors are selected to have a substantially same thermal
coefficient.

 19. The method of claim 17, wherein the first and second
20 resistors are selected to be made of a substantially same material.

 20. The method of claim 12, further comprising selecting
the reference temperature to be room temperature.

25 21. The method of claim 12, further comprising

connecting an output stage to the node for producing the output.

22. The method of claim 12, further comprising the steps
of:

5 connecting a gate of a MOS transistor to the node, a drain
 to a current path, and a source to a low voltage;
 connecting a capacitor between the node and source; and
 connecting a buffer to the drain for providing the output.